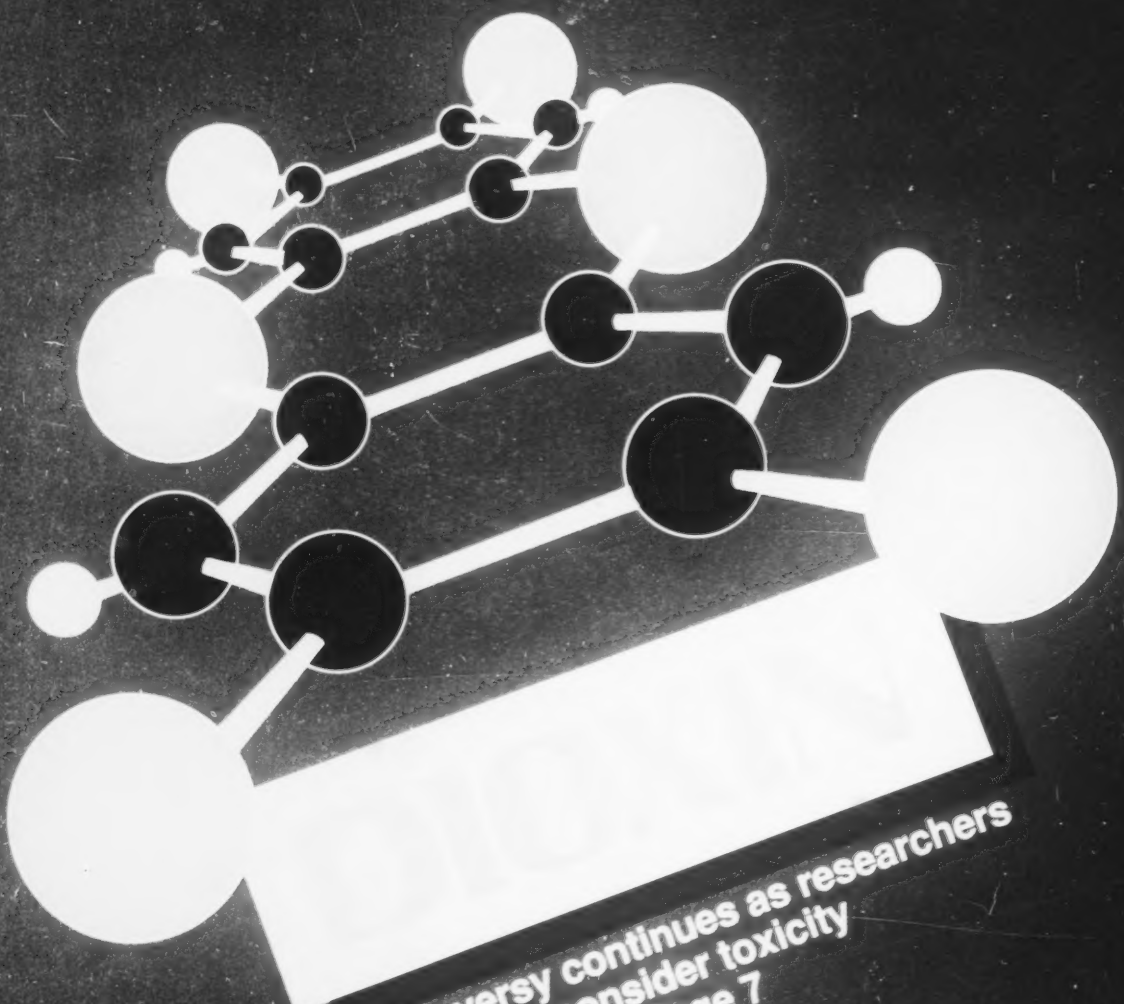
AUGUST 12, 1991
CHEMICAL & ENGINEERING

Chemical company earnings down again in second quarter
Page 16

NEWS



Controversy continues as researchers reconsider toxicity
Page 7

CHEMICAL & ENGINEERING
NEWS
Volume 69, Number 32
CENEAR 69 (32) 1–56
ISSN 0009-2347
AUGUST 12, 1991

News of the Week

■ **NIH director Bernadine P. Healy challenges allegations at House hearing that she has crippled operations of NIH's Office of Scientific Integrity.** Page 4

■ **Recent advances in understanding asphalt chemistry promise better, longer lasting roads.** Page 5

■ **U.S. chemical industry's ability to compete internationally is projected to continue at least through 2000, but pharmaceutical industry may lose its lead over foreign competitors.** Page 5

■ **High-level delegation of Soviet energy officials visits U.S., discusses expanding cooperation in energy-related fields.** Page 6

Business

Average earnings for major chemical companies dropped 18% in second quarter as sales increased 2%. **Page 16**

Petrochemical producers set to raise prices as they attempt to overcome effects of recession and the Persian Gulf War on feedstock costs and demand. **Page 21**

Government

U.S. and Soviet Union step up space research cooperation with three new research initiatives and visit by Soviet space officials to NASA facilities. **Page 24**

EPA's plan to control "toxic hot spots" in U.S. waters is criticized as being problem-riddled and weak. **Page 25**

Science/Technology

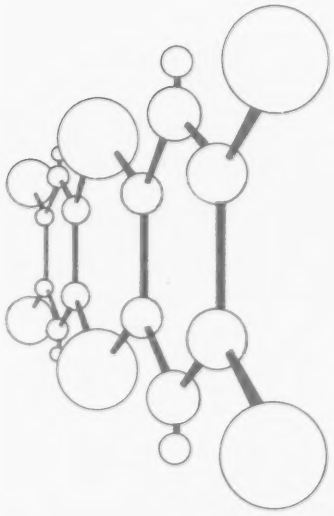
More support for scientists in the Third World, for solving practical problems like fertility regulation and tropical disease treatment, is actively sought by IOCD in U.S. and abroad. **Page 28**

Circular DNA is found to be superior to conventional linear DNA at recognizing nucleic acid sequences and binding to them. **Page 29**

Letters 2

Concentrates
Business 15
Government 23
Science/Technology 27

The Departments
ACS Comment 30
Meetings 31
ACS News 55
Newscripts 56



News Focus

Dioxin's toxicity is still an enigma, but new data on Vietnam veterans, among other studies, and insight into how the molecule interacts with DNA may give EPA a firmer basis for regulation. **Page 7**

Chemical & Engineering News
1155—16th St., N.W., Washington, D.C. 20036
Editor: Michael Heylin
Assistant Managing Editors: James H. Krieger, Janice R. Long, Donald J. Soisson, William J. Storck
Staff Editor: Ernest L. Carpenter
Senior Editors: New York: Earl V. Anderson, Stephen C. Stinson; Chicago: Joseph Haggin; London: Patricia L. Layman; Washington: Doron Dagani, Lois R. Ember, Bette Hileman, Wilbert C. Lepkowski, Rebecca L. Rawls, Pamela S. Zurer
Associate Editors: Stuart A. Borman, Mairin B. Brennan, Ann Marie Menting, Richard J. Seltzer
Service Departments Editor: Dolores Miner
Editing Services: Arlene Goldberg-Gist (Head), Rita F. Johnson (Editorial Assistant), Patricia Oates (Administrative Assistant)
News Bureaus: Northeast News Bureau: (908) 906-8300 Marc S. Reisch (Associate Editor), Ann M. Thayer (Associate Editor), Rachel Eskenazi (Administrative Assistant); Chicago: (708) 256-4143 Ward Worthy (Head); Houston: (713) 973-8161 Bruce F. Greek (Head); Susan J. Ainsworth, (Associate Editor); Washington: (202) 872-4495 David J. Hanson (Head); West Coast: (415) 653-3630 Rudy M. Baum (Head). **Foreign Bureau:** London: (01) 540-0414 Dermot A. O'Sullivan (Head)
Graphics and Production: Leroy Corcoran (Head), Barbara Fryer (Art Director), Linda Mattingly (Staff Artist), Diane Kelly (Costing)
Composition Systems Administrator: Vincent L. Parker. **Assistant:** Robin L. Shapiro
Business Manager: Arthur Poulos
Circulation Director: David Schulbaum
ADVISORY BOARD: Dexter F. Baker, George M. Bodner, F. Peter Boer, Will D. Carpenter, Renée G. Ford, Ethan C. Galloway, Louis J. Glunz, Kenneth G. Hancock, Harry S. Hertz, Christopher T. Hill, Kendall N. Houk, Cynthia A. Maryanoff, Linda B. McGown, C. Bradley Moore, George B. Rathmann, David A. Shirley, Peter H. Spitz, Barry M. Trost

Published by
AMERICAN CHEMICAL SOCIETY
(202) 872-4600; TDD (202) 872-4432
John Kistler Crum, Executive Director
Robert H. Marks, Director, Publications Division
PUBLISHING BOARD: Jeanne M. Shreeve (*Chairman*); *Board of Directors Chairman:* Joseph A. Dixon; *President:* S. Allen Heininger; Richard L. Deming, William P. Jencks, Gary J. Long, and Louis D. Quin

Subscription & Member Record Service: Send all new and renewal subscriptions with payments to: ACS, Dept. L-0011, Columbus, Ohio 43268-0011. Correspondence and telephone calls for changes of address, claims for missing issues, subscription orders, status of records and accounts should be directed to: Manager, Member & Subscriber Services, ACS, P.O. Box 3337, Columbus, Ohio 43210; (800) 333-9511 or (614) 447-3776.

For changes of address, include both old and new addresses with ZIP code numbers and mailing label from a recent issue. Allow four weeks for change to become effective. Claims for missing numbers will not be allowed if loss was due to failure of notice of change of address to be received in the time specified; if claim is dated (a) North America: more than 90 days beyond issue date, (b) all other foreign: more than one year beyond issue date; or if the reason given is "missing from files."

Subscription Rates 1991: Printed editions: nonmembers U.S. 1 yr. $95, 2 yr. $171; outside U.S. 1 yr. $131, 2 yr. $243. Air freight rates available on request. Rates above do not apply to nonmember subscribers in Japan, who must enter subscription orders with Maruzen Co. Ltd., 3-10 Nihonbashi 2-chome, Chuo-ku, Tokyo 103, Japan. Tel: (03) 272-7211. Single copies: Current $12. Rates for back issues and volumes are available from Microforms & Back Issues Office, ACS, 1155—16th St., N.W., Washington, D.C. 20036. Back and current issues available on microfilm and microfiche. Rates on request from Microform Program, ACS.

Chemical & Engineering News (ISSN 0009-2347) is published weekly except for the last week in December by the American Chemical Society at 1155—16th St., N.W., Washington, D.C. 20036. Second-class postage paid at Washington, D.C. and additional mailing offices. POSTMASTER: Send address changes to Chemical & Engineering News, Membership & Subscription Services, P.O. Box 3337, Columbus, Ohio 43210. ACS assumes no responsibility for the statements and opinions advanced by the contributors to its publications.

Advertising Management: CENTCOM LTD.
(For list of offices see page 1K.)
Office of Ombudsman: (800) ACS-5558. No. 8-5.
© Copyright 1991, American Chemical Society
Canadian GST Reg. No. R127571347

LETTERS

Charleston explosion

Dèjá vu all over again" was our immediate reaction to the News of the Week article on an explosion and fire in a phosphorus chemicals plant in Charleston, S.C. (C&EN, June 24, page 4).

In 1983, Stan Martin & Associates assisted an investigation of a perplexing explosion in a trimethyl phosphite process facility. Only by postulating an unusual, but quite plausible, (volumetric) thermal explosion resulting from pyrophoricity in trace by-products, were we able to account analytically for the remarkably high explosion overpressures, which were implied by the extensive and severe structural damage. Adding further to the coincidence, the explosion occurred in Charleston.

The similarity may end there, because the 1983 explosion was of high order, while this recent event does not seem to have involved a high-order explosion, based on the appearance of the reactor building in the photograph accompanying the article. Nevertheless, the chemistry may be the same or similar, and the investigating teams may want to review our findings of the earlier accident.

Stanley B. Martin
Proprietor and Principal Investigator
Stan Martin & Associates
Redwood City, Calif.

Video display terminals

Paul Bertan's letter (C&EN, Sept. 3, 1990, page 3) contained remarks that suggested a link between exposure to video display terminals (VDTs) and reproductive problems. Michael S. Plagge (C&EN, Nov. 19, 1990, page 3) and I (C&EN, Nov. 26, 1990, page 54) responded to some of the speculation presented by Bertan. Now Gene Dougherty (C&EN, Jan. 28, page 5) has added additional conjecture that must be challenged. His suggestion that epidemiological investigations "provide overwhelming evidence" of hazards due to electromagnetic fields (EMFs) is without support. The inconsistent findings reported by investigators working on this topic do not allow for an assessment of "overwhelming evidence." Risk ratios between 1.2 and 2.0 (which most of the studies of EMFs show) are extremely difficult to interpret due to the potential confounding of many unrelated factors. For Dougherty to say that it is "silly to continue challenging the epidemiological studies because they are confounded with other variables" is unscientific. To describe the evidence as "overwhelming ... however confounded" is contradictory.

To suggest that media reporters have acted to have "any discussion of health hazards associated with EMFs or VDTs squelched entirely" is not supported by facts and Dougherty presented none. On the contrary, the president of the National Science Writers Association has said [*Washington Journalism Rev.* **13,** 44 (1991)]: "I can't believe anyone is getting orders from management not to write about this."

Dougherty mentioned (and seemed to dismiss) Plagge's contention that the alleged hazards have been exaggerated by Paul Brodeur. To imply that Plagge's view is at variance with the views of "most responsible citizens, particularly those with scientific training," is not true. In fact many other investigators have criticized Brodeur's reports [for example, *J. of Microwave Power & Electromag. Energy,* **24,** 194 (1989); *Health Phys. Soc. Newsletter,* page 10 (Sept. 1989); *IEEE Spectrum,* **27,** 11 (1990); *IEEE Engineering in Med. & Biol. Mag.,* **9,** 89 (1990); and *Bull. of the Atomic Scientists,* **46,** 46 (1990)].

James R. Jauchem
Research Physiologist
Armstrong Laboratory
Brooks Air Force Base, Tex.

Ecosystem pollution

I consider Henry Richter's letter (C&EN, May 20, page 2) interesting and important. A couple of other quick calculations, using the data in "Statistical Abstracts of the United States" (1979), demonstrate that we would be buried instantaneously under our solid wastes (296 billion tons per year) if the global population achieved the American standard of living; global internal and coastal water bodies would be burdened with 36 billion gal of pollutants every year—that is, perhaps, all of the inland and coastal water bodies would be irredeemably polluted the first year. These kinds

Authorization to photocopy any article for internal or personal use beyond the fair use provisions of the Copyright Act is granted by ACS to libraries and other users registered with the Copyright Clearance Center (CCC), provided that the fee of $2.50 per article copy is paid directly to CCC, 27 Congress St., Salem, Mass. 01970, USA. Copying for other than internal or personal use without express permission of ACS is prohibited. Address requests for customized bulk reprints to ACS Copyright Administrator, 1155—16th St., N.W., Washington, D.C. 20036, or call (202) 872-4367. The CCC Code for C&EN is 0009-2347/91 $2.50.

Chemical Earnings Average Down Yet Again in Second Quarter

William J. Storck,
C&EN Northeast News Bureau

It's getting to be an old story. For the eighth straight quarter, chemical companies' earnings have declined from the previous year's comparable quarter. And although this year's first-quarter drop showed some moderation of that continuing decline, the second quarter worsened with an 18% decrease from the same period in 1990.

Earnings for oil companies and diversified manufacturers that have chemical operations also declined substantially in the second quarter. Only pharmaceutical companies continued to show an increase, but it seems that they are impervious to the whims of the economy—as long as people get sick and researchers come up with improved and high-value-added products.

For chemical operations, other than pharmaceuticals, the economy continued to take its toll. Poor pricing, higher feedstock costs, lower demand, and a host of other bleak economic factors all played their part.

End-use markets continued weak in the second quarter. The automotive market, a huge outlet for plastics, fibers, and other chemical products, continued to be in the doldrums. Construction, likewise, is showing little sign of vitality overall. Residential construction seems to be picking up somewhat, but commercial construction continues to be depressed as a result of a widely reported nationwide glut of office space.

The upshot is poor demand for chemical products and resulting low

Chemical industry leaders for the second quarter . . .

Sales				Earnings*			Profitability		
Rank 1991		$ Millions	Rank 1990		$ Millions	Rank 1990		Earnings as % of sales	Rank 1990
1	Dow Chemical	$4794.0	1	Monsanto	$273.0	2	International Flavors	18.4%	1
2	Monsanto	2473.0	2	Dow Chemical	233.0	1	Loctite	13.4	5
3	Union Carbide	1751.0	3	American Cyanamid	132.0	4	Great Lakes Chemical	11.5	4
4	W. R. Grace	1707.3	4	Union Carbide	64.0	3	Betz Laboratories	11.3	7
5	American Cyanamid	1420.0	5	W. R. Grace	57.6	9	Monsanto	11.0	8
6	Rohm & Haas	752.9	7	Air Products	57.1	8	Nalco Chemical	9.9	6
7	Hercules	734.0	6	Rohm & Haas	52.8	6	IMC Fertilizer	9.7	15
8	Air Products	713.4	8	Ethyl	50.1	7	American Cyanamid	9.3	13
9	Arco Chemical	703.0	9	International Flavors	48.8	10	Crompton & Knowles	9.0	12
10	Ethyl	638.1	12	Great Lakes Chemical	40.0	12	Air Products	8.0	14

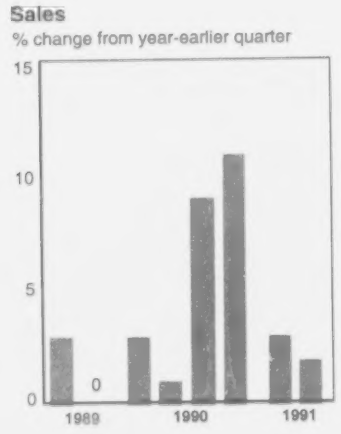
. . . and for the first six months of 1990

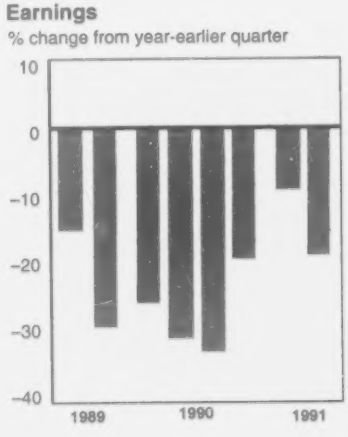
Sales				Earnings*			Profitability		
Rank 1991		$ Millions	Rank 1990		$ Millions	Rank 1990		Earnings as % of sales	Rank 1990
1	Dow Chemical	$9742.0	1	Dow Chemical	$598.0	1	International Flavors	17.9%	1
2	Monsanto	4696.0	2	Monsanto	439.0	2	Loctite	14.0	4
3	Union Carbide	3608.0	3	American Cyanamid	236.8	4	Great Lakes Chemical	11.8	3
4	W. R. Grace	3350.3	4	Union Carbide	147.0	3	Betz Laboratories	11.2	6
5	American Cyanamid	2732.8	5	Air Products	119.1	6	Nalco Chemical	10.3	5
6	Hercules	1502.0	6	Ethyl	103.0	7	Monsanto	9.3	7
7	Air Products	1468.1	8	International Flavors	95.9	9	American Cyanamid	8.7	10
8	Rohm & Haas	1432.6	7	Rohm & Haas	94.1	5	Lubrizol	8.5	9
9	Arco Chemical	1385.0	9	W. R. Grace	88.4	10	Crompton & Knowles	8.4	13
10	Quantum Chemical	1322.7	11	Arco Chemical	85.0	8	IMC Fertilizer	8.1	17
							Air Products	8.1	15

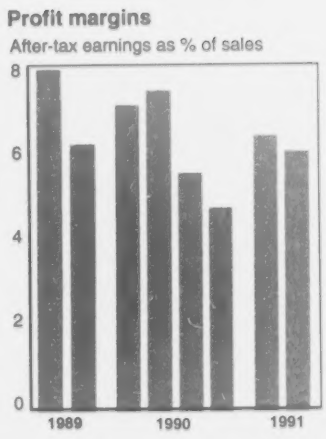
Note: Based on 30 chemical companies listed on page 18. a After taxes

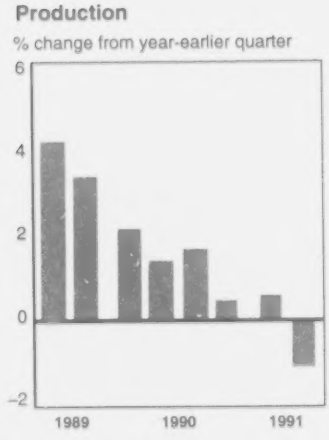
Chemical industry 1991 second-quarter results

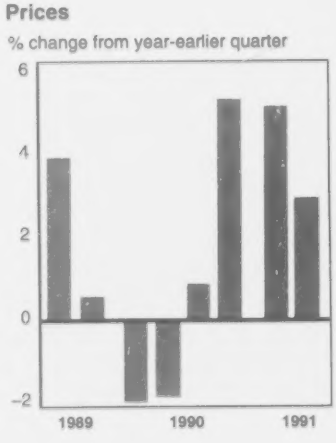
- Sales rose just 2%
- Earnings dropped 18%
- Profitability fell to 6.0%
- Production declined 0.7%
- Prices increased 2.8%











Note: All sales, earnings, and profit data are based on 30 chemical companies listed on page 18.

capacity utilization, leading to lower prices. Government data show prices for chemicals and allied products rising almost 3% for the quarter. However, this includes drugs and other high-value-added products. On a quarter-to-quarter basis, the average producer price index was off 1.4% in the second quarter of this year for chemicals and allied products when compared with the average for this index during the first three months of 1991.

More indicative of the fortunes of the chemical industry probably is the producer price index for industrial chemicals, which makes up a huge part of industry fortunes. On an annual basis, the average index for the second quarter was up just 1.5% from the same period last year. But on a quarter-to-quarter basis, the second-quarter index was down almost 3% from the first quarter this year.

One company citing the pricing situations was Dow Chemical. Dow said its overall prices were down 1% from last year's second quarter. However, when its consumer specialties segment was excluded, prices for the rest of the company declined 4%. And, when compared with the first quarter of this year, overall prices at the company fell 10%, and were down 13% when consumer specialties were excluded. Dow did, however, say that prices began to stabilize at the end of the second quarter.

These lower prices—combined with a 6% increase in manufacturing costs in the second quarter, when compared with second-quarter 1990—reduced price margins, or the difference between the selling price and the cost to produce the commodity. For Dow, costs of hydrocarbon feedstocks and energy remained flat, but cost increases reflected lower operating rates and higher expenses because of scheduled plant maintenance. The company's operating rate fell to 81% from 89% during the second quarter last year.

Falling capacity use is prevalent

Sales rise 2%, earnings fall 18% for major chemical firms in second quarter

	SECOND-QUARTER 1991						FIRST-HALF 1991			
	Sales	Earnings[a]	Change from 1990		Profit margin[b]		Sales	Earnings[a]	Change from 1990	
	($ millions)		Sales	Earnings	1991	1990	($ millions)		Sales	Earnings
Air Products	$ 713.4	$ 57.1	0%	3%	8.0%	7.8%	$ 1,468.1	$ 119.1	3%	8%
American Cyanamid	1,420.4	131.8	16	22	9.3	8.8	2,732.2	236.6	15	15
Arco Chemical	703.0	33.0	0	−68	4.7	14.5	1,385.0	85.0	0	−18
Betz Laboratories	166.3	18.8	13	15	11.3	11.1	329.7	37.1	13	17
Cabot	347.2	6.4	−12	−59	1.9	4.0	758.0	22.0	−5	47
Crompton & Knowles	119.0	10.7	21	21	9.0	9.0	225.2	18.9	17	20
Dow Chemical	4,794.0	233.0	0	−36	4.9	7.6	9,742.0	598.0	0	−28
Ethyl	638.1	50.1	6	−12	7.9	9.5	1,290.0	103.0	7	−6
First Mississippi	152.2	0.5	4	−31	0.4	0.5	283.4	2.4	8	14
H. B. Fuller	216.3	7.1	6	10	3.3	3.2	418.4	10.8	8	61
Georgia Gulf	214.1	16.6	−2	−50	7.8	15.4	449.6	33.7	−4	−52
B. F. Goodrich	637.0	8.3	1	−76	1.3	5.5	1,214.7	5.4	−1	−89
W. R. Grace	1,707.3	57.6	5	12	3.4	3.1	3,350.3	88.4	7	5
Great Lakes Chemical	346.1	40.0	35	16	11.5	13.5	665.3	78.6	31	14
Hercules	734.0	38.7	−8	22	5.0	3.8	1,502.0	69.2	−4	8
IMC Fertilizer	302.6	29.3	−1	23	9.7	7.7	588.7	47.9	0	18
Imcera	453.2	34.0	13	33	7.5	6.4	862.8	61.2	11	41
International Flavors	266.1	48.8	5	6	18.4	18.1	535.8	95.9	8	10
Loctite	141.0	18.8	1	7	13.4	12.6	279.4	39.1	2	17
Lubrizol	370.1	27.6	4	−17	7.5	9.3	742.4	62.9	4	1
Monsanto	2,473.0	273.0	4	11	11.0	10.4	4,696.0	439.0	1	0
Morton International	465.5	34.2	8	12	7.3	7.1	983.2	74.5	12	7
Nalco Chemical	346.9	34.3	18	4	9.9	11.3	639.1	65.7	12	5
Olin	568.0	21.0	−14	−28	3.7	4.4	1,129.0	42.0	−13	−31
Petrolite	83.4	3.8	16	4	4.5	5.0	161.2	6.6	12	−9
Quantum Chemical	582.5	−40.3	−1	def	def	1.2	1,322.7	−20.8	4	def
Rohm & Haas	752.9	52.8	−2	−25	7.0	9.1	1,432.6	94.1	−2	−24
Chemed	104.6	2.7	8	−40	2.6	4.7	206.9	5.1	8	−36
Union Carbide	1,751.0	64.0	−7	−45	3.7	6.2	3,608.0	147.0	−5	−30
Witco	421.3	16.0	4	−13	3.8	4.6	819.6	32.8	3	−1
TOTAL	$21,990.1	$1328.1	2%	−18%	6.0%	7.5%	$43,821.2	$2701.4	2%	−12%

a After-tax earnings from continuing operations, excluding significant nonrecurring and extraordinary items. b After-tax earnings as a percentage of sales. def = deficit.

throughout the industry, brought on by a combination of weak demand and new and upgraded production capacity. The government's measure of capacity use for chemicals and allied products in the second quarter stood at an average 78.1%, off from 78.8% in the first quarter of 1991 and a drop of more than three percentage points from 81.6% in second-quarter 1990.

A continuing high level of chemical product exports—especially plastics—helps keep capacity use from going any lower. However, although the volume of exports is up considerably, industry sources indicate that in many cases, export prices are quite low.

In the second quarter, production, and thus capacity use, was hurt considerably by inventory cutting in downstream markets, according to chemical producers. Downstream users of chemicals had built inventories during the uncertainties in the Persian Gulf region. But as soon as these uncertainties were resolved, inventories were cut to reduce carrying costs, cutting into plant operations and putting further pressure on chemical selling prices.

At Union Carbide, for instance, chairman Robert D. Kennedy said chemical margins continued under pressure as a result of the weak U.S. economy and customer inventory reductions following the end of the war in the Persian Gulf area. Kennedy also mentioned that feedstock costs, although generally declining during the quarter, remain significantly higher than they were a year ago.

The result of all of these pressures cut sharply into earnings for many chemical companies and chemical producers. Of the 30 chemical com-

FIRST-HALF 1990		12-MONTH RUNNING DATA			
Profit margin[b]		Change from 1990		Profit margin[b]	
1991	1990	Sales	Earnings	1991	1990
8.1%	7.7%	10%	15%	8.1%	7.7%
8.7	8.6	5	12	7.0	6.6
6.1	7.5	7	−41	7.4	13.4
11.2	10.9	15	17	11.1	10.9
2.9	1.9	−4	80	3.2	1.7
8.4	8.2	15	38	7.8	6.6
6.1	8.5	9	−37	5.8	10.1
8.0	9.1	5	−4	8.4	9.2
0.8	0.8	8	20	1.0	0.9
2.6	1.7	8	51	3.1	2.2
7.5	15.1	−6	−51	8.3	16.1
0.4	4.2	1	−41	2.9	4.9
2.6	2.7	10	0	3.0	3.3
11.8	13.5	27	14	12.3	13.7
4.6	4.1	0	83	3.9	2.2
8.1	6.9	2	16	8.5	7.5
7.1	5.6	15	65	6.1	4.3
17.9	17.7	11	13	16.4	16.2
14.0	12.2	19	19	12.0	12.0
8.5	8.7	16	33	9.0	7.8
9.3	9.5	4	−16	5.8	7.1
7.6	7.9	16	7	7.3	7.9
10.3	11.0	12	5	10.6	11.3
3.7	4.7	−2	−44	2.7	4.7
4.1	5.0	9	−11	3.9	4.8
def	1.0	10	def	def	2.1
6.6	8.5	3	−1	6.3	6.6
2.5	4.2	11	−4	2.9	3.3
4.1	5.5	−7	−32	4.0	5.5
4.0	4.1	5	−7	3.8	4.3
6.2%	**7.1%**	**6%**	**−17%**	**5.7%**	**7.2%**

panies regularly surveyed by C&EN, 14 had lower earnings in the second quarter than they had in second-quarter 1990. And all of these declines were in the double-digit range, including Quantum Chemical, which reported a loss.

After-tax earnings, excluding significant nonrecurring and extraordinary items for the 30 companies, totaled $1.33 billion, 18% below last year's second quarter. Their combined sales increased just 2% to a total of $22.0 billion. As a result, the average profit margin (earnings as a percentage of sales) declined to 6.0% from 7.5% in last year's second quarter for the same group of companies.

The 18% decline in chemical company earnings scotched any hope given by the first quarter—where a 9% earnings decline had ended a long string of double-digit decreases—that the chemical recession was moderating, if not ending.

Perhaps even just as worrisome is that earnings for the second quarter, which traditionally is stronger than the first, actually came in about 5% below first-quarter results. And sales in the second quarter were essentially flat. Thus, profitability declined to an average 6.0% in the second quarter from 6.4% in the first three months this year.

For the first six months of 1991, earnings for the group of 30 chemical firms were down 12% from the first half of 1990 to $2.70 billion. Sales for the first half were up 2% to about $43.8 billion. Thus, the aggregate profit margin for the companies fell to 6.2% for first-half 1991 from 7.1% during the first six months of last year.

For the remainder of the year, most of the chemical companies see some improvement, but the year is not going to be anything great, they say. Goodrich chairman and chief executive officer John D. Ong says, "Recessionary conditions in most major markets continued to dampen our performance. We are beginning to see improvement in each of our major businesses, but we nevertheless expect economic conditions to remain difficult throughout the balance of the year."

Dow's executive vice president and chief financial officer, Enrique C. Falla, says, "Concerning the business outlook for the remainder of 1991, we expect to see a modest recovery." But, he adds, "The recovery in basic chemicals and plastics will lag due to continuing weak industry fundamentals, while specialties will benefit from the recovery."

At Rohm & Haas, J. Lawrence Wilson, chairman and chief executive officer, says, "The effects of the recession remain with us. Even if the economy were to improve quickly, the Rohm & Haas upturn would lag by at least one quarter. We anticipate full-year results will parallel the performance of the first half, with earnings down approximately 20 to 25%."

Jerry R. Satrum, president and chief executive officer of Georgia Gulf, says: "While the second-quarter results were on a par with the first quarter, we have seen increased weakness in margins for some products in June and into July." Furthermore, he adds, "We

Ground rules for C&EN earnings analysis

C&EN's quarterly report on financial performance of the U.S. chemical industry contains data from the 30 largest U.S. basic chemical companies and from 23 oil and diversified companies, each with more than $200 million in annual chemical sales, plus eight pharmaceutical companies.

To be included in the table of basic chemical producers, a company must have at least 50% of its sales in chemicals. That is why Du Pont, for example, is included in the table of diversified manufacturers.

In referring to chemical sales, C&EN means those chemicals whose molecular composition has been changed in the course of manufacture. Hence, chemical sales include those of traditional categories of basic petrochemicals and inorganics, organic intermediates and inorganic compounds, polymers such as plastics and fibers, and agricultural chemicals and specialty derivatives.

In listing earnings, the survey gives after-tax income for continuing operations before nonrecurring items and extraordinary charges. Foreign currency translations are included.

Drug companies had earnings gain, but oil and diversified firms lost ground

	SECOND-QUARTER 1991						FIRST-HALF 1991					
	Sales	Earnings[a]	Change from 1990		Profit margin[b]		Sales	Earnings[a]	Change from 1990		Profit margin[b]	
	($ millions)		Sales	Earnings	1991	1990	($ millions)		Sales	Earnings	1991	1990
OIL AND GAS COMPANIES												
Amoco	$ 6,744.0	$ 306.0	−9%	−19%	4.5%	5.1%	$ 14,059.0	$ 798.0	−3%	−6%	5.7%	5.8%
Chevron	9,700.0	264.0	9	−55	2.7	6.6	20,500.0	845.0	12	−20	4.1	5.8
Exxon	27,267.0	1125.0	5	2	4.1	4.2	57,952.0	3816.0	10	9	6.6	6.6
Fina	823.6	4.2	−1	−92	0.5	6.5	1,639.5	12.5	−5	−84	0.8	4.6
Kerr-McGee	784.2	10.3	−5	−66	1.3	3.7	1,569.8	40.0	−2	−30	2.5	3.5
Mobil	14,449.0	401.0	5	−6	2.8	3.1	31,029.0	1111.0	8	30	3.6	3.0
Occidental Petroleum	5,056.0	50.0	−1	79	1.0	0.5	10,359.0	133.0	1	−4	1.3	1.3
Phillips Petroleum	3,150.0	33.0	10	−69	1.0	3.7	6,435.0	219.0	8	74	3.4	2.1
Shell Oil	5,345.0	22.0	3	−86	0.4	3.1	11,013.9	147.0	1	−60	1.3	3.3
Sun Co.	3,090.0	43.0	7	−63	1.4	4.0	6,140.0	84.0	2	−55	1.4	3.1
Texaco	9,031.0	269.0	4	−24	3.0	4.0	19,211.0	684.0	7	0	3.6	3.8
Unocal	2,725.0	5.0	0	−85	0.2	1.2	5,442.0	80.0	2	−27	1.5	2.1
TOTAL	**$88,164.8**	**$2532.5**	**3%**	**−25%**	**2.9%**	**4.0%**	**$185,349.3**	**$7969.5**	**6%**	**0%**	**4.3%**	**4.6%**
DIVERSIFIED MANUFACTURERS												
Allied-Signal	$ 3,047.0	$ 89.0	−4%	−26%	2.9%	3.8%	$ 5,950.0	$ 152.0	−5%	−39%	2.6%	4.0%
Du Pont	9,825.0	549.0	2	−21	5.6	7.2	19,504.0	1139.0	2	−13	5.8	6.9
Eastman Kodak	4,989.0	357.0	2	−7	7.2	7.9	9,411.0	535.0	5	−8	5.7	6.5
Engelhard	649.2	22.9	−14	26	3.5	2.4	1,277.9	44.0	−9	34	3.4	2.3
FMC	1,046.6	62.5	6	14	6.0	5.6	1,924.0	101.2	7	9	5.3	5.2
Ferro Corp.	270.1	9.9	−4	39	3.7	2.5	533.0	12.8	−5	−2	2.4	2.3
3M	3,349.0	299.0	4	−13	8.9	10.6	6,738.0	599.0	5	−12	8.9	10.6
NL Industries	217.2	18.5	−6	−55	8.5	17.7	442.3	27.7	−3	−58	6.3	14.3
PPG Industries	1,477.9	79.1	−6	−44	5.4	9.0	2,854.6	101.0	−6	−62	3.5	8.7
Tenneco	3,506.0	−14.0	−4	def	def	5.7	6,837.0	−13.0	−6	def	def	4.2
Vulcan Materials	266.4	25.9	−10	−35	9.7	13.4	463.4	23.7	−12	−59	5.1	11.1
TOTAL	**$28,643.3**	**$1498.8**	**0%**	**−27%**	**5.2%**	**7.1%**	**$ 55,935.2**	**$2722.3**	**0%**	**−25%**	**4.9%**	**6.6%**
PHARMACEUTICAL COMPANIES												
Abbott Laboratories	$ 1,683.0	$ 268.3	12%	12%	15.9%	16.0%	$ 3,336.6	$ 522.4	13%	12%	15.7%	15.8%
American Home Products	1,619.5	265.2	14	32	16.4	14.1	3,383.8	617.7	−1	20	18.3	15.1
Baxter International	2,197.0	141.0	10	28	6.4	5.5	4,319.0	251.0	11	def	5.8	def
Bristol-Myers Squibb	2,730.4	489.5	10	17	17.9	16.8	5,465.1	982.1	11	19	18.0	16.7
Pfizer	1,531.1	179.1	9	18	11.0	10.1	3,326.8	446.5	12	11	13.4	13.5
Schering-Plough	912.9	167.4	6	16	18.3	16.7	1,862.2	340.6	8	16	18.3	17.0
Upjohn	859.4	127.5	14	12	14.8	15.2	1,658.7	260.8	12	13	15.7	15.6
Warner Lambert	1,238.2	154.6	7	15	12.5	11.6	2,455.4	294.1	9	15	12.0	11.3
TOTAL	**$12,871.5**	**$1792.6**	**10%**	**19%**	**13.9%**	**12.9%**	**$ 25,807.7**	**$3715.2**	**9%**	**37%**	**14.4%**	**11.5%**

a After-tax earnings from continuing operations, excluding significant extraordinary and nonrecurring items. b After-tax earnings as a percentage of sales. def=deficit.

have not seen many encouraging signs of an immediate economic recovery. This could result in some further margin losses before a strengthening of the economy becomes readily apparent."

Cabot Corp. chairman Samuel W. Bodman hedges somewhat by saying, "The recession impaired volumes and margins in our manufacturing operations, while record low gas prices severely depressed the summer market for liquefied natural gas. There are some signs that conditions may be improving, but we are cautious about the immediate future."

While the 18% drop in earnings for the chemical companies was bad, these firms should be happy that they are not oil companies or diversified manufacturers. Earnings at 12 oil companies surveyed by C&EN dropped 25% to $2.53 billion on a 3% sales increase to $88.2 billion. This caused the average profit margin for the group to fall to 2.9% in the sec-

Chemical earnings drop at oil companies

While earnings at major chemical companies were falling 19% in the second quarter, earnings from chemical operations at oil companies were dropping almost twice that much. Because oil companies report net income from chemical operations, this measure provides a good look at what is happening in the petrochemical industry.

For seven oil companies with large chemical businesses—Chevron, Exxon, Mobil, Occidental Petroleum, Phillips, Shell, and Unocal—earnings from chemical operations dropped an average of 37% to a combined $462 million in the quarter.

Of the seven firms, only Unocal had an increase in chemical earnings, but what an increase it was, especially compared with the other companies. Unocal posted a 50% increase to $24 million in the second quarter. The company says very little about these results, except that "higher second-quarter earnings reflected increased margins for industrial chemical products."

The best performance among the other six companies came at Occidental, where chemical earnings were down 26% from the second quarter to $127 million. The company says the lower earnings were the result of lower margins in petrochemicals, electrochemicals, and polymers and plastics. This was primarily caused by lower sales prices and higher feedstock and raw material costs. In spite of the decline in earnings at the company, Occidental still rang up a more than respectable chemical profit margin of 10.7% for the quarter.

Exxon, the oil company with the largest chemical sales, also blamed higher feedstock prices, plus weak economic conditions and industry overcapacity for lower margins in chemicals, both in the U.S. and overseas. Exxon's chemical earnings fell 36% to $111 million in the second quarter.

The story was pretty much the same at the other oil companies, all citing lower margins in chemicals from higher feedstock costs and lower selling prices. And all are blaming—and waiting for the end of—the recession in the chemical industry.

CHEMICAL EARNINGS

	Second quarter		
$ Millions	1991	1990	% change
Chevron	$ 36	$ 65	-45%
Exxon	111	174	-36
Mobil	61	94	-35
Occidental Petroleum	127	172	-26
Phillips	45	120	-63
Shell	58	90	-36
Unocal	24	16	50
TOTAL	$462	$731	-37%

ond quarter from 4.0% in the same period a year earlier. For the six months, earnings at the companies were flat at $7.97 billion on a 6% sales increase to $185 billion. Profit margins for the group dropped to 4.3% from 4.6% in first-half 1990.

For 11 diversified manufacturers, second-quarter earnings fell 27% to a total of $1.5 billion on flat sales of $28.6 billion, causing the group's profit margin to fall to 5.2% from 7.1% in last year's second quarter. For the six months, earnings were off 25% to $2.72 billion on $55.9 billion in sales, essentially the same figure as in first-half 1990. This depressed profit margins to an average of 4.9% through June of this year from 6.6% in the same period last year.

In stark contrast stand the pharmaceutical manufacturers. For these eight companies, earnings for the quarter rose an average 19% to $1.79 billion on a 10% sales increase to $12.9 billion. Profit margin for the group was 13.9%, up from 12.9% in second-quarter 1990. For the first half, earnings for these companies were up 37% to $3.72 billion on a 9% sales increase to $25.8 billion. And the profit margin for the group rose to 14.4% from 11.5% a year earlier. However, the increases in first-half earnings and profitability for pharmaceutical producers are tainted somewhat by a nonrecurring charge recorded in the first quarter of 1990 by Baxter International, which threw the company into a deficit. Baxter did not state the charge in after-tax terms, so it is impossible to remove its effect from the company's results. □

Petrochemical prices slated to rise

For petrochemical producers, these are anything but happy times. Demand is down because of recession or sluggish conditions in many of the industry's primary end-use markets, and because many customers are still working off high inventories of materials. Following major disruptions caused by the invasion of Kuwait and the subsequent war in the Persian Gulf, prices of feedstocks are high. With prices of their materials even lower than the months leading up to the Gulf War, however, profit margins are being squeezed severely.

Producers are getting restive. Despite the continuing unfavorable market conditions, it seems clear that producers will be going all out this autumn to put through price increases. Whether those increases stick remains to be seen. But a determined effort will clearly be there.

First salvos on the front to raise prices came late last month from Himont and BP Chemicals. Himont, part of the Montecatini chemicals group in Italy, and the world's largest producer of polypropylene, says it is determined to "follow through on the price initiative in Europe," embarked upon in May, to raise polypropylene prices.

The company's goal is to achieve a minimum target price of about 36 cents per lb for polypropylene, effective Sept. 1. The July price ranged from 29 to 31 cents per lb. The new target price would pertain to raffia-grade homopolymer resins; general purpose injection grades would be set at 38.8 cents per lb and medium-impact copolymer, at 45 cents per lb. With raw material prices expected to remain stable, prices could be maintained through the remainder of 1991, the company says.

Meanwhile, BP Chemicals' marketers in London have pulled together a comprehensive picture of the grim business in polyethylene.

BP Chemicals links the fall in profitability directly to the crisis in the Middle East. Up to that time, the industry was stable; demand, albeit slowing down from recessionary pressures, matched supply. Then came Iraq's invasion of Kuwait, and